Tsitologiia 2002 vol.44 N5, pages 485-490

Effect of modification of cell calcium status on lectin activity | Aktivnost' lektinov pri izmenenii kal'tsievogo statusa kletok.

Beliaeva N., Garaeva L., Timofeeva O., Chulkova I., Khokhlova L.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Effects of oryzalin (10 microM), an inhibitor of microtubule polymerization, on the activity of soluble and cell wall lectins were studied in 7 day-old seedlings of unhardened (23 degrees C) and cold acclimated (7 days at 2-3 degrees C) winter wheat (Triticum aestivum L.). Seedlings were grown in the presence of 25 microM and 1 mM Ca2+, 500 microM verapamil, 250 microM chlorpromazine or without modifiers of calcium status in the medium. Inhibitor of the microtubule polymerization inhibitor, likely as inhibitors of Ca(2+)-signal, decreased the activity of soluble lectins and increased that of cell wall lectins. Apparently, injury of microtubule phosphorylation results in a more considerable microtubule disorganization, than that observed after oryzalin effect. A low Ca2+ concentration (25 microM) depressed, while a high concentration (1 mM) prompted microtubule sensibility to oryzalin. Such an effect of high Ca2+ concentration may be related to destabilizative action of Ca(2+)-calmodulin in these conditions, because chlorpromazine decreased oryzalin-induced increase in the activity of cell wall lectins with 1 mM Ca2+. It is concluded that the activity of cell wall lectins depends on the microtubule status that is regulated by calcium signal.